

## **HRS DOCUMENTATION RECORD COVER SHEET**

**Name of Site:** Chemfax, Inc.

**EPA ID No.** MSD008154486

### **Contact Persons**

Documentation Record:

Jennifer L. Wendel  
National Priorities List Coordinator  
EPA Region 4  
61 Forsyth Street  
Atlanta, Georgia 30303

## HRS DOCUMENTATION RECORD

Name of Site: Chemfax, Inc. Date Prepared: December 1992  
EPA Region: 4 Date Revised: March 2012  
Street Address of Site\*: Three Rivers Road and Creosote Road  
City, County, State, Zip Code: Gulfport, Harrison County, Mississippi 39505  
General Location in the State: South  
Topographic Map: Gulfport North, Mississippi  
Latitude: 30.428888 North  
Longitude: -89.089166 West

\*The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

### Scores

Air Pathway	76.80
Ground Water Pathway	Not Scored
Soil Exposure Pathway	Not Scored
Surface Water Pathway	Not Scored
<b>HRS SITE SCORE</b>	<b>38.40</b>

## WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S<sup>2</sup></u>
1. Ground Water Migration Pathway Score (S <sub>gw</sub> )	<u>NS</u>	—
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	<u>NS</u>	
2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	<u>NS</u>	
2c. Surface Water Migration Pathway Score (S <sub>sw</sub> ) Enter the larger of lines 2a and 2b as the pathway score.	<u>NS</u>	—
3. Soil Exposure Pathway Score (S <sub>s</sub> ) (from Table 5-1, line 22)	<u>NS</u>	—
4. Air Migration Pathway Score (S <sub>a</sub> ) (from Table 6-1, line 12)	<u>76.80</u>	<u>5898.24</u>
5. Total of S <sub>gw</sub> <sup>2</sup> + S <sub>sw</sub> <sup>2</sup> + S <sub>s</sub> <sup>2</sup> + S <sub>a</sub> <sup>2</sup>		<u>5898.24</u>
6. <b>HRS Site Score</b> Divide the value on line 5 by 4 and take the square root		<u>38.40</u>

**HRS Table 6-1 Air Migration Pathway Scoresheet**

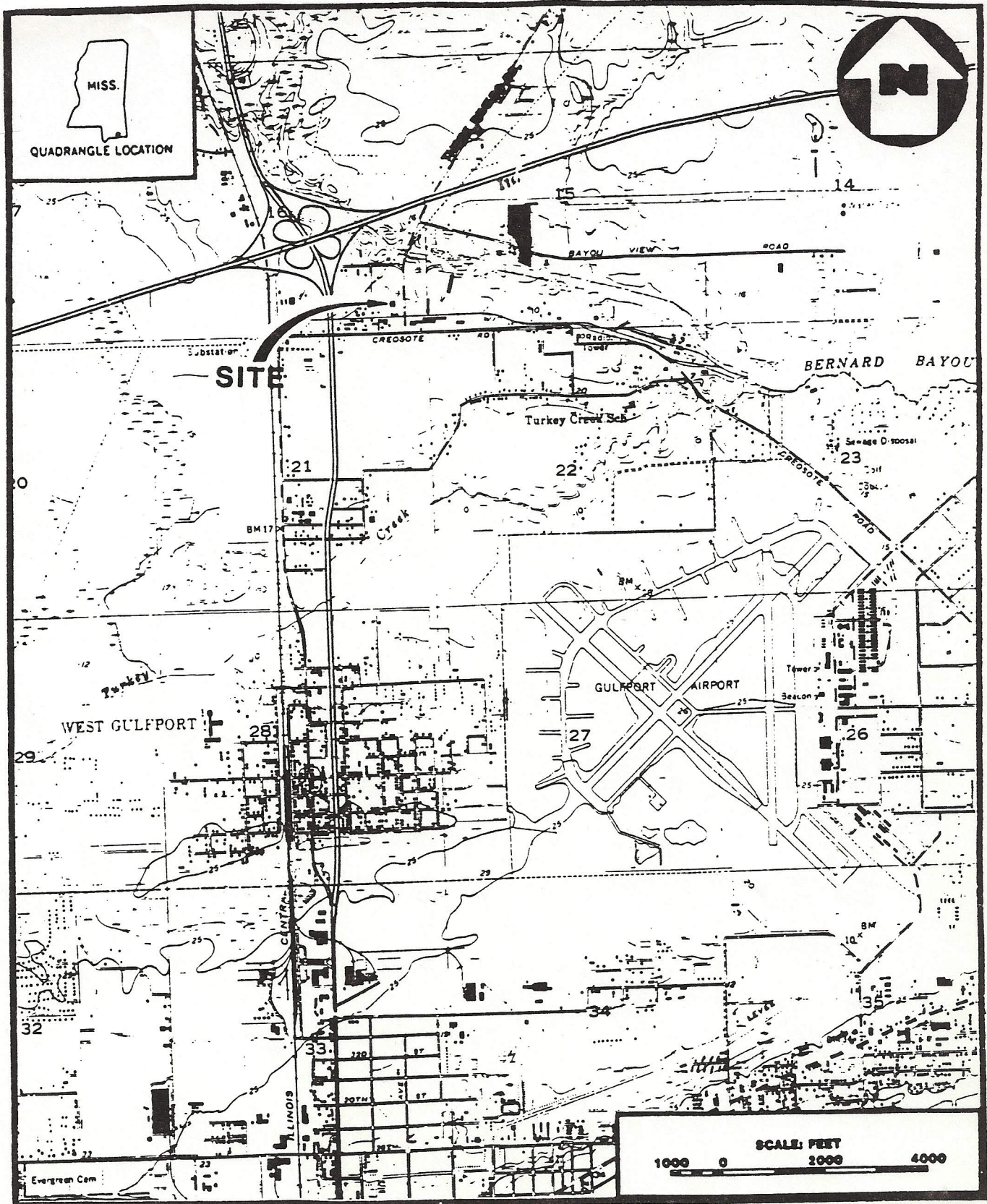
Factor Categories and Factors	Maximum Value	Value Assigned
<b>Likelihood of Release:</b>		
1. Observed Release	550	550
2. Potential to Release:		
2a. Gas Potential to Release	500	NS
2b. Particulate Potential to Release	500	NS
2c. Potential to Release (higher of lines 2a and 2b)	500	NS
3. Likelihood of Release (higher of lines 1 and 2c)	550	550
<b>Waste Characteristics:</b>		
4. Toxicity/Mobility	(a)	2000
5. Hazardous Waste Quantity	(a)	100
6. Waste Characteristics	100	18
<b>Targets:</b>		
7. Nearest Individual	50	50
8. Population:		
8a. Level I Concentrations	(b)	590
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(b)	NS
8d. Population (lines 8a + 8b + 8c)	(b)	590
9. Resources	5	0
10. Sensitive Environments		
10a. Actual Contamination	(c)	NS
10b. Potential Contamination	(c)	NS
10c. Sensitive Environments (Lines 10a + 10b)	(c)	NS
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	640
<b>Air Migration Pathway Score</b>		
12. Pathway Score ( $S_a$ ), $[(\text{lines } 3 \times 6 \times 11)/82,500]^d$	100	76.80

<sup>a</sup>Maximum value applies to waste characteristics category.

<sup>b</sup>Maximum value not applicable.

<sup>c</sup>No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum of 60.

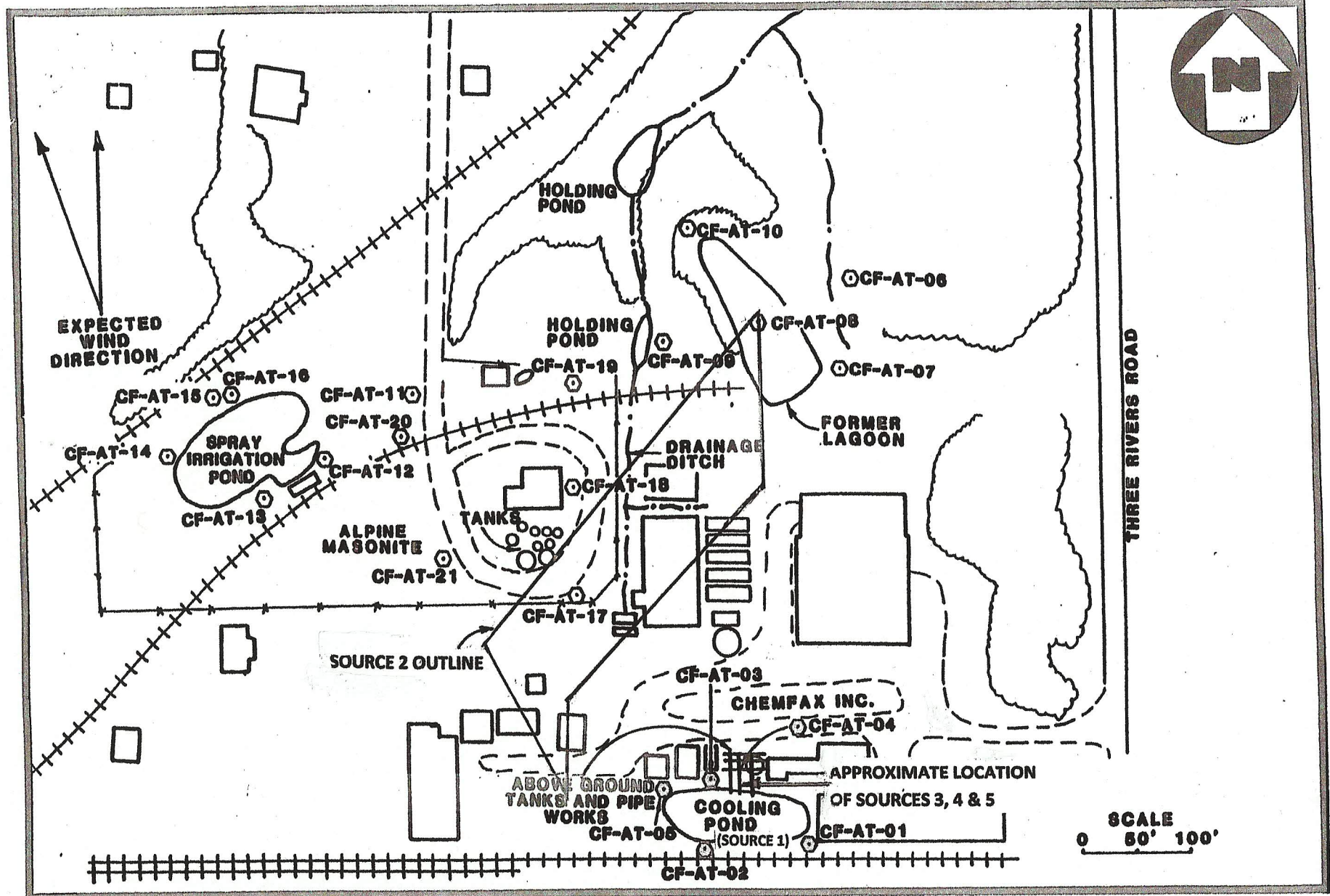
<sup>d</sup>Do not round to nearest integer.



BASE MAP IS A PORTION OF THE USGS 7.5 MINUTE QUADRANGLE GULFPORT NORTH, MISSISSIPPI, 1976.  
**SITE LOCATION MAP**  
**CHEMFAX INC.**  
**GULFPORT, HARRISON CO., MISSISSIPPI**

FIGURE 1





**CHEMFAX INC.  
GULFPORT, HARRISON COUNTY, MISSISSIPPI**



Owner Source Area Calculation

Plant Chemfax

Unit \_\_\_\_\_

Project No. 52013.010 File No. E.1

Title \_\_\_\_\_

Contaminated Soil

Computed By Cynthia K. Gurk

Date July 13 1992

Checked By \_\_\_\_\_

Date \_\_\_\_\_ 19 \_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Each of the samples used to delineate the area of contaminated soil have contaminants that are attributable to the presence of Chemfax.

CF-SS-02: Naphthalene, Xylene, Styrene, Ethyl benzene.

CF-SS-04: Naphthalene

CF-SS-07: Naphthalene

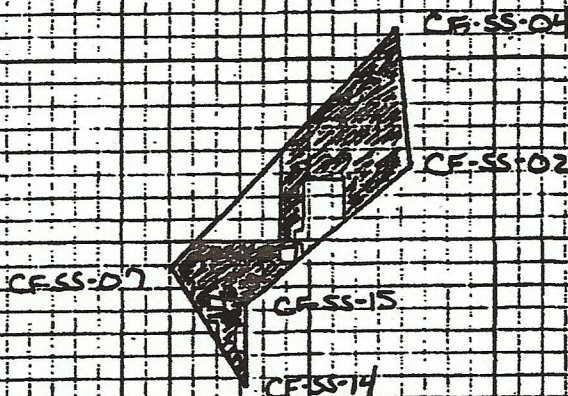
CF-SS-14: Naphthalene

CF-SS-15: Naphthalene, Xylene, Ethyl benzene.

\* All 3x background or equal to or above NAL.

Source: 2

Contaminated Soil



Waste Quantity

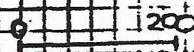
36 blocks

$$(36 \text{ blocks} \times 961 \text{ ft}^2) = \frac{\text{block}}{\text{block}}$$

34,596 ft<sup>2</sup> of  
contaminated soil

$$34,596 \div 34,000 = 1.02$$

Scale



Generated by: Cynthia K. Gurley

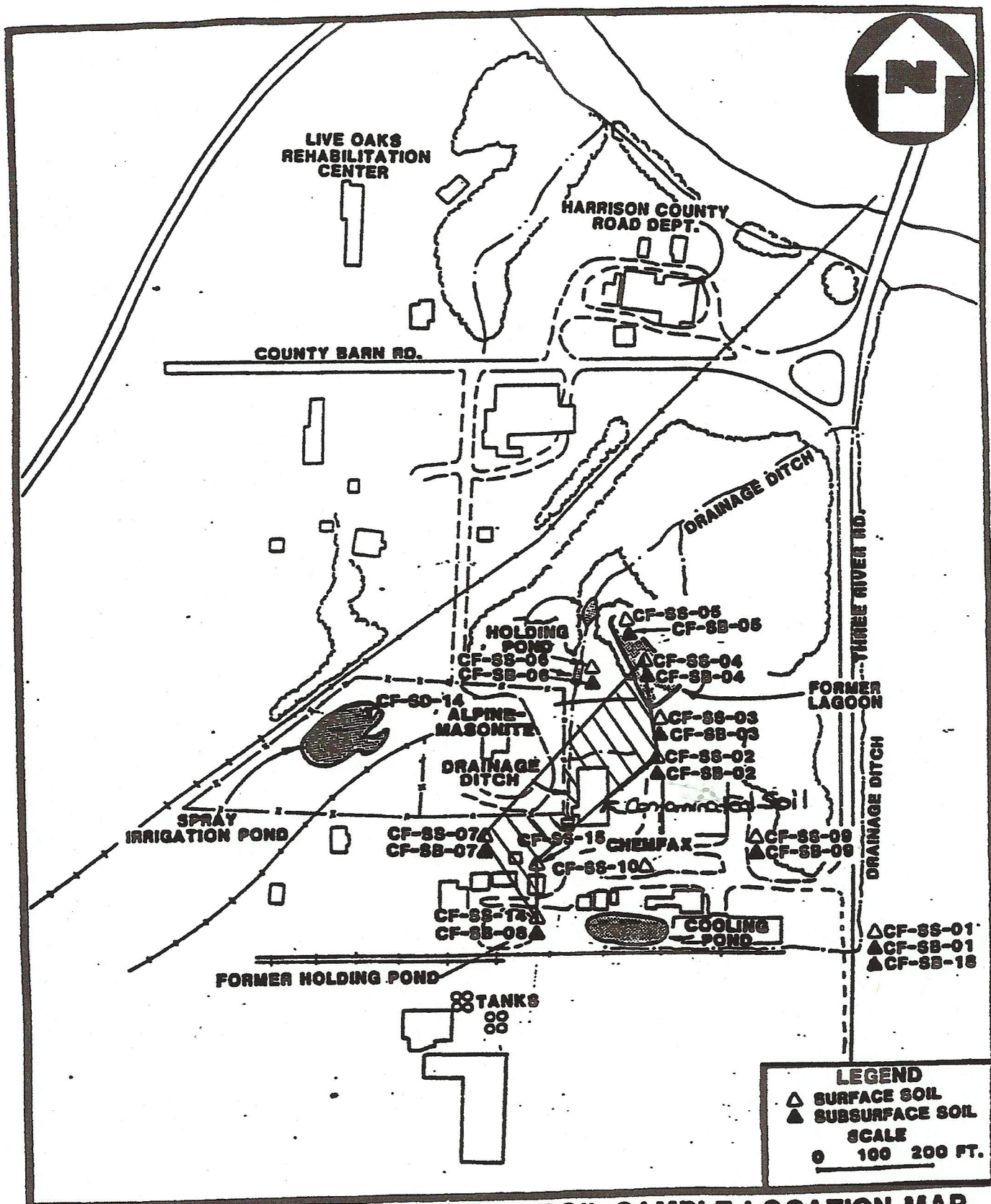
$$200 \text{ ft} \times 6.5 \text{ blocks} =$$

$$31.5 \text{ ft/block side.}$$

$$1 \text{ block} = 961 \text{ ft}^2$$

DO NOT WRITE IN THIS SPACE

VC/1-A/N-1/12A



**SOURCE AND NON-SOURCE AREA SOIL SAMPLE LOCATION MAP  
CHEMFAX INC.  
GULFPORT, HARRISON CO., MISSISSIPPI**

**FIGURE 4**

**NUS**  
CORPORATION

## REFERENCES

- | Ref.<br>No. | Description of the Reference  |
|-------------|---|
| 1.          | U.S. Environmental Protection Agency (USEPA). Hazard Ranking System, 55 FR 51533, December 14, 1990. A complete copy of the HRS can be found online at <a href="http://www.epa.gov/superfund/sites/npl/hrsres/index.htm">http://www.epa.gov/superfund/sites/npl/hrsres/index.htm</a> . Excerpt. 1 page.   |
| 2.          | USEPA. Superfund Chemical Data Matrix (SCDM). January 2004 and December 2, 2011. A complete copy of SCDM can be obtained online at <a href="http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm">http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm</a> . Excerpt. 12 pages.   |
| 3.          | USEPA. EPA Superfund Record of Decision: Chemfax, Inc., EPA ID: MSD008154486, OU1, Gulfport, MS. EPA/ROD/R04-03-079. November 21, 2002. 124 pages.  |
| 4.          | Environmental Management Services, Inc. Site Characterization Report, Chemfax, Inc. Site, Three Rivers Road, Gulfport, Harrison County, Mississippi. Prepared for Mississippi Department of Environmental Quality and USEPA, Region 4. October 5, 2009. 58 pages.   |
| 5.          | Estes, G.E. Jr., of Estes and Estes, P.A., Attorneys at Law. Letter to CERCLA Docket Office, Headquarters, USEPA. Subject: Proposed Superfund Site at Chemfax, Inc., Gulfport, MS., with attachments. June 20, 1994. 15 pages.  |
| 6.          | Hazclean Environmental Consultants, Inc. Letter to CERCLA Docket Office, Headquarter, USEPA. Subject: Proposed Superfund Site at Chemfax, Inc., Gulfport, Mississippi, with attachments. February 18, 1994. 15 pages.   |
| 7.          | USEPA. Pollution Report #5 and Final. From Roberta M. Runge, On-Scene Coordinator, USEPA Region IV to Doug Lair, Branch Chief. Subject: Chemfax, Harrison County, Gulfport, Miss. December 27, 1999. 5 pages.   |
| 8-11.       | References Reserved.  |
| 12.         | NUS Corporation, Superfund Division, "Final Expanded Site Investigation Report, Chemfax, Inc., Gulfport, Harrison County, Mississippi, Vol. I," Revision 0, Prepared under TDD No. F4-8911-102 for the Waste Management Division of the EPA (September 1991). 30 pages, Appendix A, 32 pages, Tables 6-17; Appendix B, 8 pages, Figures 1-8; Appendix F, 495 pages. |
| 13.         | Reference Reserved.   |
| 14.         | NUS Corporation, Superfund Division, "Final Expanded Site Investigation Report, Chemfax, Inc., Gulfport, Harrison County, Mississippi, Vol. II: Air Study, " Revision 0, Prepared under TDD No. F4-8911-102 for the Waste Management Division of the EPA (September 1991). 20 pages; Appendix A, 4 pages; Appendix B, 42 pages.                                     |

15. NUS Corporation Field Logbook No. F4-2286 for Chemfax, Inc., TDD No. F4-8911-102. Documentation of RHRS data collection, June 4-6, 1990. 18 pages.
16. Surface Water Migration Pathway Map. U.S. Geological Survey, 7.5-minute series Topographic Quadrangle Maps of Mississippi: Gulfport North 1954 (Photorevised 1985), Biloxi 1954 (Photorevised 1970, 1976), scale 1:24,000. 1 map.
17. Reference Reserved.
18. NUS Corporation, Superfund Division, "Final Site Screening Investigation Report, Chemfax, Inc., Gulfport, Harrison County, Mississippi, " Revision 1, Prepared under TDD No. F4-8804-31 for the Waste Management Division of the EPA (April 1989). 32 pages.
- 19-20. References Reserved.
21. Cynthia K. Gurley, B & V Waste Science and Technology Corporation, Calculations generated by using James E. Brady and John R. Holum, "Ideal Gas Law," Fundamentals of Chemistry, 2nd ed., pp. 272-275 (New York: John Wiley & Sons, 1984). 8 pages.
22. Brooke Bittinger, NUS Corporation, telephone conversation with Rhonda Dingman, Administrative Assistant, Gulfport Chamber of Commerce, October 10, 1990. Subject: The number of employees at Chemfax, Inc. 1 page.
23. Reference Reserved.
24. U.S. Department of Commerce, Proof Copy of table generated for 1990, CPH-1: Summary population and housing characteristics, issued by Bureau of Census (April 1991). 1 page.
25. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, compiled from U.S. Bureau of the Census data (1980). 1 page.
26. U.S. Geological Survey, 7.5-minute series Topographic Quadrangle Maps of Mississippi: Gulfport NW 1956 (Photorevised 1985), Gulfport North 1954 (PR 1985), Gulfport South 1954 (PR 1986), scale 1:24,000. 1 map.
27. U.S. Fish and Wildlife Service, Gulf Coast Ecological Inventory, Mobile 1982, scale 1:250,000. 11 pages, 1 map.
- 27A. Reference Reserved.
- 28-29. References Reserved.
30. Brooke Bittinger, NUS Corporation, telephone conversation with Susan Spears, Assistant to the County Engineer, City of Gulfport Engineering, February 13, 1991. Subject: The Location of any Surface Water Intakes off of Bernard Bayou, Big Lake or Back Bay. 1 page.
- 31-38. References Reserved.

39. NUS Corporation Field Logbook No. F4-2317 for Chemfax, Inc., TDD No. F4-9001-85. Documentation of air sampling, May 30, 1990 – June 5, 1990. 18 pages.
40. U.S. Environmental Protection Agency, Compendium Method TO-14, The Determination of Volatile Organic Compounds (VOCs) in Ambient Air using Summa Passivated Canister Sampling and Gas Chromatographic Analysis, from Quality Assurance Division, Environmental Monitoring Systems Laboratory, May 1988. 122 pages.
41. Cynthia K. Gurley, U.S. Environmental Protection Agency, telephone conversation with Gigi Rainer, Information Specialist, Harrison County Development Commission, November 17, 1992. Subject: The number of employees at the Alpine Masonite Company. 1 page.
42. Gary Bennett, Chemist, U.S. Environmental Services Division. Memorandum to Al Hanke, Chief, Site Assessment Section, U.S. Environmental Protection Agency, November 30, 1992. Subject: Qualified Analytical Data Used for Chemfax, Inc. 3 pages.

## 1.0 SITE DESCRIPTION

Chemfax, Inc. (Chemfax) is composed of five identified sources on the Chemfax, Inc. facility property, along with an observed release to air. The Chemfax facility is an inactive and abandoned 11-acre facility located in an industrial section of Harrison County just north of Gulfport, Mississippi. See Figures 1 and 2 of this HRS documentation record. The facility manufactured synthetic hydrocarbon resins and waxes from 1955 until 1995. The primary operation was a paraffin blending process in which different grades of paraffin wax were heated to a liquid state, blended and then cooled with water (Ref. 12, p. 3). The cooling water reportedly did not come into contact with the wax (Ref. 12, p. 3); however, samples collected from a cooling water pond during a 1988 sampling investigation at the facility contained a number of volatile and semi-volatile organic compounds (Ref. 18, Tables 1 and 4). A 1990 sampling investigation also documented an area of contaminated soil at the facility in which volatile and semi-volatile organic compounds were detected. This area of contaminated soil was located a few hundred feet to the north and northwest of the cooling pond (Ref. 12, pp. 16, 17, Table 8, Figure 5). The cooling pond and the area of contaminated soil are scored as Sources 1 and 2, respectively.

During the 1990 sampling investigation, air samples were collected at the facility and an observed release to air was documented based on these samples (Ref. 14, Figure 1; See section 6.1.1 of this HRS documentation record). Three additional sources were identified by Chemfax as releasing vapors to air at the time of the air sampling (Ref. 5, p. 7); these three sources, the spill, drip pan and molten resin processing area, are scored as Sources 3, 4 and 5, respectively. The hazardous substances found in the observed release samples were benzene, toluene, ethyl benzene, styrene, total xylenes and naphthalene. In addition, several of the contaminant concentrations were above HRS-designated health-based benchmarks for air, and workers were scored as exposed to Level I contaminant levels (See Section 6.1.1 of this HRS documentation record). At some point between June 1993 and January 1994, Chemfax backfilled the cooling pond with soil (Ref. 6, pp. 3, 4). Operations at the facility ceased in 1995 (Ref. 7, p. 1).

Field work for a Remedial Investigation (RI) and Supplemental Ground Water Characterization was conducted by the EPA in January 1995 and March 1999, respectively. The RI report was finalized in January 1996 and the Feasibility Study (FS) was finalized in April 2000. A baseline risk assessment for human health was also included as part of the FS, and was finalized in April 2000. An Addendum to the FS was finalized on June 7, 2000, which addressed some additional issues not included as part of the April 2000 document (Ref. 3, p. 8).

As part of the Feasibility Study, the EPA conducted a facility visit in December 1998. This visit revealed that the facility was easily accessible to trespassers, many drums were stored on the property, and the buildings were occupied by transients. Chemfax was therefore assessed under Superfund's removal authority, which is intended to address short-term threats to public health and the environment (Ref. 3, p. 8). Based on the available data, EPA conducted a time-critical removal action at the Chemfax facility from July 1999 to November 1999. The purpose of this removal was to address imminent threats posed by the facility. At that time, approximately 195 tons of drummed contaminated soils; 52,258 gallons of hazardous waste from above-ground storage tanks; additional contaminated soils from around the tank farms; and a number of buried drums of waste paraffin, wax and oil were removed (Ref. 7, pp. 1-3).

A Record of Decision (ROD) was published by the EPA in 2002. The ROD detailed remedial actions to address long-term threats posed by Chemfax to human health and the environment. The major components of the remedy outlined in the ROD include:

- Excavation of contaminated soils and sediments from areas exceeding cleanup standards;
- Backfilling of excavated areas with clean soil;
- Off-site disposal of excavated soils and sediments at an approved facility;
- Extraction of contaminated ground water, treatment by physical and/or chemical means, discharge to surface water;
- Continuation of ground water remediation until performance standards are met;
- Institutional controls to restrict land use during remediation;
- Control of fugitive dust emissions and surface water runoff during remediation (Ref. 3, pp. 1, 3).

In 2009, a Site Characterization sampling investigation was conducted at Chemfax on behalf of the Mississippi Department of Environmental Quality (MDEQ) and EPA (Ref. 4). The purpose of the additional work was to evaluate the current characterization of contaminants in soils and ground water, develop aquifer characterization data and compare the results to those of previous investigations (Ref. 4, p. 1). The results of this investigation revealed remaining contamination with volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) in soil and shallow ground water at the Site (Ref. 4, pp. 6, 9, Tables 4, 5). As a result of the supplemental data obtained, the EPA is currently amending the 2002 ROD.

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

Name of source: Cooling pond

Number of source: 1

Source Type: Surface impoundment

Description and Location of Source (with reference to a map of the site): The water in the cooling pond is used to cool paraffin wax after it is blended. The water does not come into contact with the wax. This pond has a clay bottom (Ref. 12, p. 11). The type of clay bottom is not documented. The cooling pond (source) is limited to the water placed in the pond.

The cooling pond is located on the south portion of the site (Ref. 12, Appendix B, p. 3). (See Figure 2 of this HRS documentation record.) The cooling pond was not removed during the 1999 response action (Refs. 3, App. D, p. 2; 7, pp. 1-3).

#### Containment

Gas containment: The description of the “abatement” conducted by Chemfax on the cooling pond states that the pond was backfilled to grade, but there is no mention of the contaminated contents having been removed first (Ref. 6, pp. 3, 4). On this basis, it is estimated that uncontaminated soil cover could be between 1 and 3 feet. Conservatively, it is assumed that the soil could be heavily vegetated, given the inactive and abandoned status of the site, but the cover soil type is unknown. These conditions, applied to HRS Table 6-3, result in a gas containment value of 7 for the air pathway (Ref. 1, p. 51652).

Particulate containment: Based on the description of estimated post-abatement conditions provided above, the particulate containment value from HRS Table 6-9 is 7 (Ref. 1, p. 51653).

#### Hazardous Substances

Hazardous Substance	Evidence	Sample Type	Reference
Naphthalene	200,000 ug/kg	CF-SD-15	12, App. F, p. 2
2-Methylnaphthalene	27,000 ug/kg	CF-SD-15	12, App. F, p. 2
Calcium	1,700 mg/kg	CF-SD-16	12, App. F, p. 248
Copper	12 mg/kg	CF-SD-16	12, App. F, p. 248
Iron	7100J mg/kg	CF-SD-16	12, App. F, p. 248
Lead	28 mg/kg	CF-SD-16	12, App. F, p. 248
Manganese	31 mg/kg	CF-SD-16	12, App. F, p. 248
Mercury	0.43J mg/kg	CF-SD-15	12, App. F, p. 1; 42
Nickel	3.7 mg/kg	CF-SD-16	12, App. F, p. 248
Zinc	160 mg/kg	CF-SD-15	12, App. F, p. 1
Benzene	17 ug/l	CF-SW-05	18, App. A, p. 1
Toluene	90 ug/l	CF-SW-05	18, App. A, p. 1
Ethyl benzene	75 ug/l	CF-SW-05	18, App. A, p. 1
Xylene	160 ug/l	CF-SW-05	18, App. A, p. 1
Styrene	290 ug/l	CF-SW-05	18, App. A, p. 1
SD - Sediment	SW – Surface Water	CF - Chemfax	J – Estimated Value

## **2.4.2 HAZARDOUS WASTE QUANTITY**

### **2.4.2.1.1. Hazardous Constituent Quantity**

#### Description

No information on Constituent Quantity was available.

Hazardous Constituent Quantity Assigned Value: NA

### **2.4.2.1.2. Hazardous Wastestream Quantity**

#### Description

No data was available on wastestream quantity.

Hazardous Wastestream Quantity Assigned Value: NA

### **2.4.2.1.3. Volume**

#### Description

The estimated dimensions of the cooling pond are 5 ft x 30 ft x 200 ft (Ref. 15, p. 9).

#### CALCULATION

30,000 ft<sup>3</sup> or 1,111 yd<sup>3</sup>

Sum (yd<sup>3</sup>/gal): 1,111 yd<sup>3</sup>

Equation for Assigning Value (Ref. 1, Table 2-5):  $1,111 \text{ yd}^3 / 2.5 = 444$

Volume Assigned Value: 444

### **2.4.2.1.4. Area**

#### Description

Not evaluated

Area Assigned Value: 0

### **2.4.2.1.5. Source Hazardous Waste Quantity Value**

Highest assigned value assigned from Ref. 1, Table 2-5: 444

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

Name of source: Contaminated soil

Number of source: 2

Source Type: Contaminated soil

Description and Location of Source (with reference to a map of the site): An area of contaminated soil has been delineated on the site. (Ref. 12, Appendix F; 18, Appendix A). (See Figures 3 and 4 of this HRS documentation record.) Each of the samples used to delineate the area of contaminated soil include: CF-SS-02, CF-SS-04, CF-SS-07, CF-SS-14, CF-SS-15.

A small portion of the contaminated soil area was excavated during the 1999 response action (Ref. 3, Appen. D, p. 2); this portion is accounted for in the hazardous waste quantity evaluation.

#### Containment

Gas and Particulate release to air

Situation not listed (Ref. 1, Tables 6-3, 6-9, pp. 51652, 51653).

VALUE: 10

#### Hazardous Substances

Hazardous Substance	Evidence	Sample Type	Reference
Naphthalene	68,000 ug/kg	CF-SS-02	12, App. F, p. 297
	800 ug/kg	CF-SS-04	12, App. F, p. 3
	7500 ug/kg	CF-SS-07	12, App. F, p. 316
	1300 ug/kg	CF-SS-14	12, App. F, p. 5
	2800 ug/kg	CF-SS-15	12, App. F, p. 345
Xylene	39,000 ug/kg	CF-SS-02	12, App. F, p. 295
	340 ug/kg	CF-SS-15	12, App. F, p. 343
Styrene	1500J ug/kg	CF-SS-02	12, App. F, p. 295
Ethyl benzene	1400 ug/kg	CF-SS-02	12, App. F, p. 295
	22 ug/kg	CF-SS-15	12, App. F, p. 343
SS – Surface Soil	CF – Chemfax, Inc.	J – Estimated Value	

## **2.4.2 HAZARDOUS WASTE QUANTITY**

### **2.4.2.1.4. Area**

#### Description

Contaminated soil is located on the Chemfax property. There is an approximately 34,596 ft<sup>2</sup> area of contaminated soil (Ref. 12, Appendix F; 18, Appendix A). (See Figures 3 and 4 of this HRS documentation record.)

Sum (ft<sup>2</sup>): 34,596

(Refs. 1, Table 2-5; 12, Appendix F; 18, Appendix A)

During the 1999 time-critical removal action, an estimated 70-by-50-foot area of this contaminated soil area was excavated and removed (Refs. 3, Appendix D, p. 2; 7). However, because the specific location and precision of this latter estimate is unknown, the area of Source 2 is considered as unknown but greater than zero.

Area Assigned Value: >0

### **2.4.2.1.5. Source Hazardous Waste Quantity Value**

Highest assigned value assigned from Ref. 1, Table 2-5: >0

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

Name of source: Spill of raw feedstock

Number of source: 3

Source Type: Other

Description and Location of Source (with reference to a map of the site): A spill of raw feedstock occurred while the 1990 sampling investigation was ongoing; it occurred in the vicinity of air sampling stations CF-AT-03 and CF-AT-04 (Ref. 5, pp. 7, 11, 13, 14). Chemfax referred to the spill as “the liter or so of raw feedstock that sometimes spills when a hose is disconnected that has not been properly purged, or when a valve is not properly closed when the charging process is begun” (Ref. 5, p. 7). Because the liquid phase could have been at least partially contained in the drip pan (Ref. 5, p. 7), its location is expected to have been in the immediate vicinity of air sample location CF-AT-04 (Ref. 5, p. 13, Exhibit B). This is shown on Figure 2 of this HRS documentation record.

While this source is currently no longer present, it was identified as releasing hazardous substances to air at the time of the air sampling study (see section 2.2.2 of this HRS documentation record, below), therefore, it is included as a scored source.

### 2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

Chemfax described the quantity of the spill as “sufficient to be detected by the air sampling equipment,” and stated “that process vapors were actually sampled” by the 1990 air sampling stations adjacent to the cooling pond (Ref. 5, p. 7). Therefore, the hazardous substances in the observed release to air are associated with this source. Please see section 6.1.1 of this HRS documentation record for the background and observed release samples that document the release. The hazardous substances are shown below.

#### List of Hazardous Substances Associated with Source

Benzene  
Toluene  
Ethyl benzene  
Styrene  
Total xylenes  
Naphthalene

### 2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	References
Gas release to air: Due to the nature of the spill, no containment features, such as a gas collection system or cover, are associated with it. According to Chemfax’s acknowledgement, vapors from the spill were detected in the air samples used to document the	10	Refs. 1, Table 6-3, p. 51652; 5, p. 7.

Containment Description	Containment Factor Value	References
observed release. These conditions fit the Table 6-3 category of “All situations except those specifically listed below.”		
Particulate release to air: Based on the description provided above, the category from Table 3-9 of “All situations except those specifically listed below” applies.	10	Refs. 1, Table 6-9, p. 51653; 5, p. 7
Release to ground water: NS		
Release via overland migration and/or flood: NS		

Notes:

NS Not Scored

## 2.4.2 HAZARDOUS WASTE QUANTITY

### 2.4.2.1.1. Hazardous Constituent Quantity

#### Description

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity.

Hazardous Constituent Quantity Assigned Value: NS

### 2.4.2.1.2. Hazardous Wastestream Quantity

#### Description

The spill is described by Chemfax as approximately one liter; one liter converts to approximately 0.264 gallon (common metric to standard conversion). In accordance with HRS Table 2-5 (Ref. 1, p. 51591), one gallon equals approximately ten pounds. Therefore, 0.264 gallon equals 2.64 pounds.

Sum (pounds): 2.64

Sum of Wastestream Quantity/5,000 (Ref. 1, Table 2-5):  $2.64 / 5000 = 0.000528$

Hazardous Wastestream Quantity Assigned Value: 0.000528

#### **2.4.2.1.3. Volume**

##### Description

Not evaluated (Ref. 1, p. 51591).

Volume Assigned Value: NS

#### **2.4.2.1.4. Area**

##### Description

Not evaluated (Ref. 1, p. 51591).

Area Assigned Value: NS

#### **2.4.2.1.5. Source Hazardous Waste Quantity Value**

Highest assigned value assigned from Ref. 1, Table 2-5: 0.000528

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

Name of source: Drip pan

Number of source: 4

Source Type: Other

Description and Location of Source (with reference to a map of the site): Chemfax stated that spills of raw feedstock (please see source description for Source 3) are “usually contained within the drip pan provided for that purpose” (Ref. 5, p. 7). It is noted that the use of the word “usually” suggests that feedstock also, at some frequency, spills outside of the drip pan. According to Exhibit B of Reference 5, p. 13, the drip pan was located near air sample station CF-AT-04. Please also see Figure 2 of this HRS documentation record.

While this source is currently no longer present, it was identified as releasing hazardous substances to air at the time of the air sampling study (see section 2.2.2 of this HRS documentation record, below), therefore, it is included as a scored source.

### 2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

Chemfax’s reference to the quantity of the spill as “sufficient to be detected by the air sampling equipment,” also applies to this source as the spilled material was partially contained within this source (Ref. 5, p. 7). Therefore, the hazardous substances in the observed release to air are associated with this source. Please see section 6.1.1 of this HRS documentation record for the background and observed release samples that document the release. The hazardous substances are shown below.

#### List of Hazardous Substances Associated with Source

Benzene

Toluene

Ethyl benzene

Styrene

Total xylenes

Naphthalene

### 2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	References
Gas release to air: Because during its operational period the drip pan received spills from Chemfax’s operations area, it is expected that it was open, without cover, and it was located in the open, in the vicinity of the air sampling stations. The category of HRS Table 6-3 to which this corresponds is “All situations except those specifically listed below.”	10	Refs. 1, Table 6-3, p. 51652; 5, pp. 7, 13.

Containment Description	Containment Factor Value	References
Particulate release to air: Based on the description provided above, the category from Table 3-9 of "All situations except those specifically listed below" applies.	10	Ref. 1, Table 6-9, p. 51653; 5, pp. 7, 13
Release to ground water: NS		
Release via overland migration and/or flood: NS		

Notes: NS Not Scored

## 2.4.2 HAZARDOUS WASTE QUANTITY

### 2.4.2.1.1. Hazardous Constituent Quantity

#### Description

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity.

Hazardous Constituent Quantity Assigned Value: NS

### 2.4.2.1.2. Hazardous Wastestream Quantity

#### Description

No information is available to evaluate wastestream quantity.

Hazardous Wastestream Quantity Assigned Value: NS

### 2.4.2.1.3. Volume

#### Description

The volume of the pan is unknown; based on Chemfax's description that it contains spills, it is expected to be greater than zero (Ref. 5, p. 7).

Volume Assigned Value: >0

#### **2.4.2.1.4. Area**

Description: Not evaluated.

Area Assigned Value: 0

#### **2.4.2.1.5. Source Hazardous Waste Quantity Value**

Highest assigned value assigned from Ref. 1, Table 2-5: >0

## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

Name of source: Molten Resin Processing Area

Number of source: 5

Source Type: Other

Description and Location of Source (with reference to a map of the site): During the time the air sampling study was being conducted, Chemfax stated that the process area was in use, and molten resins were being pumped through filters in the area (Ref. 5, pp. 7, 11, 14). Reference 5, page 13, Exhibit B shows the location of this area as being in the immediate vicinity of CF-AT-04 and the drip pan. See also Figure 2 of this HRS documentation record.

While this source is currently no longer present, it was identified as releasing hazardous substances to air at the time of the air sampling study (see section 2.2.2 of this HRS documentation record, below), therefore, it is included as a scored source.

### 2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

Chemfax stated that “[m]olten resins necessarily release considerably more vapor than resins and distillates at ambient temperatures,” and that these vapors were reflected in the air sampling results of the 1990 air sampling stations adjacent to the cooling pond (Ref. 5, pp. 7, 11, 14). On this basis, the hazardous substances in the observed release to air are associated with this source. Please see section 6.1.1 of this HRS documentation record for the background and observed release samples that document the release. The hazardous substances are shown below.

#### List of Hazardous Substances Associated with Source

Benzene  
Toluene  
Ethyl benzene  
Styrene  
Total xylenes  
Naphthalene

### 2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Factor Value	References
Gas release to air: Because this source was stated by Chemfax to be releasing vapor, and was located in the open adjacent to the air sampling stations, no containment features such as cover or gas collection system were associated with it. The category of HRS Table 6-3 to which this corresponds is “All situations except those	10	Refs. 1, Table 6-3, p. 51652; 5, pp. 7, 13.

Containment Description	Containment Factor Value	References
specifically listed below.”		
Particulate release to air: Based on the description provided above, the category from Table 3-9 of “All situations except those specifically listed below” applies	10	Ref. 1, Table 6-9, p. 51653; 5, pp. 7, 13
Release to ground water: NS		
Release via overland migration and/or flood: NS		

Notes:

NS Not Scored

## 2.4.2 HAZARDOUS WASTE QUANTITY

### 2.4.2.1.1. Hazardous Constituent Quantity

#### Description

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity.

Hazardous Constituent Quantity Assigned Value: NS

### 2.4.2.1.2. Hazardous Wastestream Quantity

#### Description

Although hazardous substances are known to be associated with this source, no information is available on which to base a hazardous waste quantity estimate. Therefore, its hazardous waste quantity is assigned as unknown but greater than zero.

Hazardous Wastestream Quantity Assigned Value: >0

### 2.4.2.1.3. Volume

#### Description

No information available.

Volume Assigned Value: NS

#### **2.4.2.1.4. Area**

##### Description

No information available.

Area Assigned Value: NS

#### **2.4.2.1.5. Source Hazardous Waste Quantity Value**

Highest assigned value assigned from Ref. 1, Table 2-5: >0

### SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Containment Factor Value by Pathway				
			Ground Water (GW) (Ref. 1, Table 3-2)	Surface Water (SW)		Air	
				Overland/flood (Ref. 1, Table 4-2)	GW to SW (Ref. 1, Table 3-2)	Gas (Ref. 1, Table 6-3)	Particulate (Ref. 1, Table 6-9)
1	444	N	NS	NS	NS	7	7
2	>0	N	NS	NS	NS	10	10
3	0.000528	N	NS	NS	NS	10	10
4	>0	N	NS	NS	NS	10	10
5	>0	N	NS	NS	NS	10	10

## 6.0 AIR MIGRATION PATHWAY

### 6.1 LIKELIHOOD OF RELEASE

#### 6.1.1 OBSERVED RELEASE

##### Direct Observation

Direct observation is not evaluated.

##### Chemical Analysis

- Background Concentrations:

Sample ID	Date	Start/Stop Time	Sampling Inlet Height above Ground (inches)	Reference(s)
CF-AT-01	5-31-90	8:38 am/12:35pm	26.75	39, p. 18
CF-AT-02	5-31-90	8:41am/12:37pm	26	39, p. 18

Sample ID	Hazardous Substance	Concentration (ppbv)	Sample Quantitation Limit (ppbv)	Reference(s)
CF-AT-01	Benzene	ND	0.48U	14, p. 10; App. B, p. 4
	Toluene	0.90	NA	14, p. 10; App. B, p. 4
	Ethyl benzene	0.16J	NA	14, p. 10; App. B, p. 4
	Styrene	0.07J	NA	14, p. 10; App. B, p. 4
	Total xylenes	ND	0.90U	14, p. 10; App. B, p. 4
	Naphthalene	ND	0.30U	14, p. 10; App. B, p. 5
CF-AT-02	Benzene	ND	0.44U	14, p. 10; App. B, p. 6
	Toluene	ND	0.70U	14, p. 10; App. B, p. 6
	Ethyl benzene	0.37	NA	14, p. 10; App. B, p. 6
	Styrene	ND	0.40U	14, p. 10; App. B, p. 6

	Total xylenes	ND	1.4U	14, p. 10; App. B, p. 6
	Naphthalene	2.40	NA	14, p. 10; App. B, p. 7

Notes:

ND Not Detected

- Contaminated Samples:

Sample ID	Date	Start/Stop Time	Sampling Inlet Height above Ground (inches)	Reference(s)
CF-AT-03	5-31-90	8:43 am/12:40pm	26.25	39, p. 18
CF-AT-04	5-31-90	8:45am/12:39pm	26	39, p. 18
CF-AT-05	5-31-90	8:52am/12:38pm	27.5	39, p. 18

Sample ID	Hazardous Substance	Concentration (ppbv)	Sample Quantitation Limit (ppbv)	Reference(s)
CF-AT-03	Benzene	14	0.48U/0.44U	14, p. 10; App. B, p. 2
	Toluene	17	0.70U	14, p. 10; App. B, p. 2
	Ethyl benzene	44	NA	14, p. 10; App. B, p. 2
	Styrene	120	0.40U	14, p. 10; App. B, p. 2
	Total xylenes	95	1.4U/0.90U	14, p. 10; App. B, p. 2
	Naphthalene	12	0.30U	14, p. 10; App. B, p. 3
CF-AT-04	Benzene	18	0.48U/0.44U	14, p. 10; App. B, p. 1
	Toluene	18	0.70U	14, p. 10; App. B, p. 1
	Ethyl benzene	22	NA	14, p. 10; App. B, p. 1
	Styrene	62	0.40U	14, p. 10; App. B, p. 1
	Total xylenes	45	1.4U	14, p. 10; App. B,

Sample ID	Hazardous Substance	Concentration (ppbv)	Sample Quantitation Limit (ppbv)	Reference(s)
				p. 1
	Naphthalene	8.8	0.30U	14, p. 10; App. B, p. 8
CF-AT-05	Toluene	3.6	0.7U	14, p. 10; App. B, p. 9
	Ethyl benzene	7.3	NA	14, p. 10; App. B, p. 9
	Styrene	23	0.40U	14, p. 10; App. B, p. 9
	Total xylenes	17	1.4U/0.9U	14, p. 10; App. B, p. 9

### Level I & II Samples

#### Sample ID: CF-AT-03

Reference for Benchmarks: 2, 21

Hazardous Substance	Mol. wt.	Hazardous Substance Concentration	Benchmark	Benchmark Level
Benzene	78.12	0.0447 mg/m <sup>3</sup>	0.00031 mg/m <sup>3*</sup>	Level I
Toluene	92.15	0.0641 mg/m <sup>3</sup>	5.2 mg/m <sup>3**</sup>	Level II
Ethyl benzene	106.17	0.1910 mg/m <sup>3</sup>	0.00097 mg/m <sup>3*</sup>	Level I
Styrene	104.16	0.5112 mg/m <sup>3</sup>	1.0 mg/m <sup>3**</sup>	Level II
Total xylenes	106.17	0.4125 mg/m <sup>3</sup>	0.1 mg/m <sup>3**</sup>	Level I
Naphthalene	128.19	0.06291 mg/m <sup>3</sup>	0.000072 mg/m <sup>3*</sup>	Level I

\* = Cancer risk benchmark

\*\* = Non-cancer risk benchmark

### Level I & II Samples

#### Sample ID: CF-AT-04

Reference for Benchmarks: 2, 21

Hazardous Substance	Mol. wt.	Hazardous Substance Concentration	Benchmark	Benchmark Level
Benzene	78.12	0.0575 mg/m <sup>3</sup>	0.00031 mg/m <sup>3*</sup>	Level I
Toluene	92.15	0.0678 mg/m <sup>3</sup>	5.2 mg/m <sup>3**</sup>	Level II

Ethyl benzene	106.17	0.0955 mg/m <sup>3</sup>	0.00097 mg/m <sup>3*</sup>	Level I
Styrene	104.16	0.2641 mg/m <sup>3</sup>	1.0 mg/m <sup>3**</sup>	Level II
Total xylenes	106.17	0.1954 mg/m <sup>3</sup>	0.1 mg/m <sup>3**</sup>	Level I
Naphthalene	128.19	0.0461 mg/m <sup>3</sup>	0.000072 mg/m <sup>3*</sup>	Level I

\* = Cancer risk benchmark

\*\* = Non-cancer risk benchmark

### Level I & II Samples

#### Sample ID: CF-AT-05

Reference for Benchmarks: 2, 21

Hazardous Substance	Mol. wt.	Hazardous Substance Concentration	Benchmark	Benchmark Level
Toluene	92.15	0.0135 mg/m <sup>3</sup>	5.2 mg/m <sup>3**</sup>	Level II
Ethyl benzene	106.17	0.0317 mg/m <sup>3</sup>	0.00097 mg/m <sup>3*</sup>	Level I
Styrene	104.16	0.0979 mg/m <sup>3</sup>	1.0 mg/m <sup>3**</sup>	Level II
Total xylenes	106.17	0.0738 mg/m <sup>3</sup>	0.1 mg/m <sup>3**</sup>	Level II

\* = Cancer risk benchmark

\*\* = Non-cancer risk benchmark

#### Attribution:

All weather conditions during air sampling was taken from direct observation and from a Weather Pro weather station. The weather conditions include: wind speed, wind direction, temperature, and barometric pressure. This data is located in the field logbook (Reference 39, pp. 18, 19). The large downwind/upwind concentration ratios for benzene, naphthalene, styrene, ethyl benzene and others, combined with the occurrence during the sampling period of a fairly steady, south-southeast to southwest wind, strongly indicates that the cooling pond and surrounding contaminated soil areas were the sources of these compounds released to the air. The final report for the Site Screening Inspection (SSI) indicates that Chemfax used various solvents in its processing, these include: alkylated xylene and naphthalene (Ref. 18, pp. 7, 18).

The air samples were analyzed through the Special Analytical Services of the Contract Laboratory Program. The whole-air sample procedures were based on Compendium Method TO-14 (Ref. 40).

In addition, Chemfax stated that process vapors were sampled during the 1990 air sampling, indicating this included the spill of raw feedstock and the molten resins being pumped through filters (Ref. 5, p. 7).

#### Hazardous Substances Released

Benzene, Toluene, Ethyl benzene, Styrene, Total Xylenes, Naphthalene.

Air Observed Release Factor Value: 550

### 6.1.2 POTENTIAL TO RELEASE

Since criteria have been met to constitute an observed release to air, the Potential to Release component of this pathway was not evaluated.

## 6.2 WASTE CHARACTERISTICS

### 6.2.1 TOXICITY/MOBILITY

Hazardous Substance	Source No.	Toxicity Factor Value	Gas Mobility Factor Value	Particulate Mobility Factor Value	Toxicity/Mobility Factor Value (Ref. 1, Table 6-13)	References
Benzene	1, 3-5	1000	1	NA	1000	2, p. 4
Toluene	1, 3-5	10	1	NA	10	2, p. 9
Ethyl benzene	1-5	10	1	NA	10	2, p. 5
Styrene	1-5	10	1	NA	10	2, p. 8
Mercury	1	10,000	0.2	0.00008	2000	2, p. 6
Naphthalene	1-5	1000	1	0.02	1000	2, p. 7

Notes:

NA Not Applicable

Benzene, toluene, ethyl benzene, styrene and naphthalene were assigned gas mobility values of 1.0 because they were found in observed release to air (Ref. 1, Section 6.2.1.2). Mercury was detected in the cooling pond, but not in observed release to air (Refs. 12, App. F, p. 1; 42).

Toxicity/Mobility Factor Value: 2000

### 6.2.2 HAZARDOUS WASTE QUANTITY

Source No.	Source Type	Source Hazardous Waste Quantity
1	Surface Impoundment	444
2	Contaminated Soil	>0
3	Other	0.000528
4	Other	>0

Source No.	Source Type	Source Hazardous Waste Quantity
5	Other	>0

Sum of Values: 444.000528

Hazardous Waste Quantity Factor Value: 100  
(Ref. 1, Table 2-6)

### 6.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

Toxicity/mobility Factor Value: 2000  
Hazardous Waste Quantity Factor Value: 100

Toxicity/mobility Factor Value x  
Hazardous Waste Quantity Factor Value:  $2 \times 10^5$

Waste Characteristics Factor Category Value: 18  
(Ref. 1, Table 2-7)

## 6.3 TARGETS

### Level I Distance Categories

Sample ID: CF-AT-03; CF-AT-04; CF-AT-05

Location: CF-AT-03 was taken on the north side of the cooling pond, CF-AT-04 was taken on the north side of the cooling pond, beneath aboveground tanks, and CF-AT-05 was taken on the northwest corner of the cooling pond.

Reference: Reference 14, p. 3.

Source: Cooling pond, contaminated soil, spill, drip pan and molten resin processing area.

Distance from the source in miles: Less than one-quarter.

Reference: 5, pp. 7, 13; 14, pp. 5, 6, 7. See also Figures 2, 3 and 4 of this HRS documentation record.

Distance categories subject to Level I concentrations: 0-1/4 mile radius.

Samples CF-AT-03, CF-AT-04 and CF-AT-05 contain Level I and II concentrations of contaminants. See tables in Section 6.1.1 of this HRS documentation record. The Level I air contamination encompasses a quarter of a mile radius around the cooling pond which includes the delineated area of contaminated soil. There are 57 employees at Chemfax that use the parking lot and the building on the property (at the time of the air release), thus all 57 employees are subject to Level I concentrations (Ref. 22). A target survey was conducted on June 6, 1990 by NUS Corporation. This survey concluded that there are no homes within a quarter mile radius of Chemfax, Inc. (Ref. 15, p. 16). However, the Alpine Masonite Company has two employees that are within a quarter mile radius of the cooling pond on the Chemfax property (at the time of the air release) (Ref. 41). Therefore, 59 individuals are subject to Level I concentrations within a quarter mile radius of the cooling pond.

Samples CF-AT-03, CF-AT-04 and CF-AT-05 were collected from the perimeter of the cooling pond (Ref. 14, p. 9). Sample canisters were placed at least six inches from the water in the cooling pond, on a plastic sheet around the perimeter of the cooling pond (Ref. 14, Appendix A, p. A-3).

### Level II Distance Categories

No additional Level II distance categories have been documented.

### Actual Contamination Distance Categories

As documented above.

#### 6.3.1 NEAREST INDIVIDUAL

##### Nearest Individual - Level I Concentrations

Residence, building or area subject to Level I concentrations: There were 57 active workers on Chemfax and 2 active workers on Alpine Masonite at the time of the observed release to air that were subject to Level I concentrations (Refs. 14, p. 3; 22; 41).

Nearest Individual Factor Value: 50

### 6.3.2 POPULATION

#### 6.3.2.2 Level I Concentrations

##### Level I Population Targets

Distance Category	Population	References
Onsite	59	22

Sum of Population Exposed to Level I Concentrations: 59

Sum of Population Exposed to Level I Concentrations x 10: 590

Level I Concentrations Factor Value: 590

#### 6.3.2.3 Level II Concentrations

##### Level II Population Targets

Level II Concentrations Factor Value: 0

#### 6.3.2.4. Potential Contamination

Potential Population Targets

Population subject to potential contamination was not scored.

Potential Contamination Factor Value: NS

### 6.3.3 RESOURCES

There are no resources within one-half mile of Chemfax, Inc. (Reference 26).

Resources Factor Value: 0

### 6.3.4 SENSITIVE ENVIRONMENTS

Sensitive Environments: Not Evaluated